



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1999-0094

July 28, 1999

Shaaron Netherton, Acting Area Manager
Deschutes Resource Area
U.S. Department of the Interior
Bureau of Land Management
Prineville District Office
P.O. Box 550
Prineville, Oregon 97754

Re: Biological/Conference Opinion on Ongoing and Proposed Bureau of Land Management
Activities Affecting Middle Columbia River Steelhead and Fall Chinook Salmon, Deschutes
Resource Area, Lower Deschutes River, Oregon

Dear Ms. Netherton:

Enclosed is the National Marine Fisheries Service's (NMFS) Endangered Species Act (ESA) section 7 biological opinion and conference opinion on the Bureau of Land Management's (BLM) ongoing and proposed activities within the Deschutes Resource Area. The NMFS has determined that the subject actions are not likely to jeopardize the continued existence of listed Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) or Snake River (SR) fall chinook salmon (*O. tshawytscha*) or result in the destruction or adverse modification of proposed critical habitat for MCR steelhead.

If you have any specific questions please contact Ron Lindland at (503) 231-2315 or Randy Tweten at (503) 231-2202.

Sincerely,

William Stelle, Jr.
Regional Administrator

Enclosure

cc: Jeff Dillon, U.S. Fish and Wildlife Service
Jim Newton, Oregon Department of Fish and Wildlife



Endangered Species Act - Section 7
Consultation

BIOLOGICAL/CONFERENCE OPINION

Ongoing and Proposed Bureau of Land Management Activities Affecting
Middle Columbia River Steelhead and Fall Chinook Salmon

Lower Deschutes River

Agency: Bureau of Land Management, Prineville District, Deschutes Resource Area

Consultation

Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: July 28, 1999

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I. Background

On March 11, 1999, the National Marine Fisheries Service (NMFS) received a March 8, 1999, letter from the Bureau of Land Management (BLM), Prineville District, Deschutes Resource Area requesting formal conferencing regarding the potential effects of their ongoing and proposed activities on Middle Columbia River (MCR) steelhead and the Deschutes River population of the Snake River (SR) fall chinook salmon Evolutionarily Significant Unit (ESU). The accompanying Biological Assessment (BA) described ongoing and proposed actions and the environmental baseline, and addressed the effects of those ongoing and proposed BLM actions on MCR steelhead and SR fall chinook salmon in the Lower Deschutes River and tributaries within the BLM's Deschutes Resource Area. On April 29, 1999, NMFS received a letter requesting formal consultation on MCR steelhead and conferencing on SR fall chinook salmon for the actions covered in the March, 1999, BA. On May 17 and 19, NMFS requested additional information via e-mails from Ron Lindland, Fishery Biologist, NMFS, to Jim Eisner, Fishery Biologist, BLM. On May 21, 1999, a conference call was held between NMFS and BLM personnel to discuss commercial and private boating on the Lower Deschutes River which were two of the actions addressed in the BA. On May 24, 1999, the BLM issued a letter under Section 7(d) of the Endangered Species Act (ESA) which determined that continued implementation of the actions under consultation would make no irreversible and irretrievable commitment of resources that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative, nor result in the destruction or adverse modification of critical habitat of listed species.

MCR steelhead (*Onchorynchus mykiss*) were listed as threatened under the ESA by NMFS on March 25, 1999 (64 FR 14517). The NMFS proposed critical habitat for MCR steelhead on February 5, 1999 (64 FR 5740). SR fall chinook salmon were listed as threatened in 1992 (57 FR 14653). On March 9, 1998, NMFS proposed to redefine the SR fall chinook Evolutionarily Significant Unit (ESU) boundaries to include fall chinook salmon populations in the Deschutes River (63 FR 11482). On March 24, 1999, NMFS issued a notice of partial 6-month extension on the final listing determination based on substantial scientific disagreements regarding the sufficiency and accuracy of data relevant to final listing determination for the Deschutes River fall chinook population (64 FR 14329). Critical habitat has not yet been designated for MCR steelhead or proposed for the Deschutes River portion of the SR fall chinook salmon ESU.

The objective of this biological opinion (Opinion) is to determine whether the subject actions are likely to jeopardize the continued existence of MCR steelhead or SR fall chinook salmon or result in the destruction or adverse modification of proposed critical habitat for MCR steelhead.

II. Proposed Actions

The BA submitted to NMFS describes six categories of actions to be conducted by the BLM within the Deschutes Resource Area: recreation trail and campground maintenance, road maintenance, guide and outfitter program, range allotments, State of Oregon boater pass program which is administered by the BLM, and annual MCR steelhead spawning surveys. The BLM determined in the BA, and NMFS

concurred in a June 23, 1999 letter, that the recreation trail and campground maintenance is a “may affect, but not likely to adversely affect” (NLAA) action regarding MCR steelhead and SR fall chinook salmon. The other five actions (guide and outfitter permit program, road maintenance, range allotments, State of Oregon boater pass program, and steelhead spawning ground surveys) were determined by the BLM to be “may affect, and likely to adversely affect” (LAA) the listed fish species. Those LAA actions are the subject of this Opinion.

The Deschutes Resource Area of the Prineville BLM District is within the geographic area covered by PACFISH; therefore, all BLM activities are required to be consistent with their Resource Management Plan (RMP) as amended by PACFISH. The NMFS anticipates that these proposed actions will be consistent with the ongoing broadscale consultation with the BLM on the effects of their RMPs on the MCR steelhead ESU. NMFS expects the results of this broadscale consultation to be similar to the requirements of NMFS’ June 22, 1998 biological opinion, “Section 7 Consultation on the Effects of Continued Implementation of Land and Resource Management Plans on Endangered Species Act Listed Salmon and Steelhead in the Upper Columbia and Snake River Basins” (NMFS 1998).

Guide and Outfitter Permit Program

The BLM is the lead agency in managing commercial boating recreation use on the Lower Deschutes River. The BLM annually administers approximately 120 commercial permits for whitewater rafting and fishing guides on the mainstem Deschutes River. Approximately 60% of the permittees are fishing guides, 35% whitewater guides, and 5% are outfitters that deliver rental boats to the put-in points. The BLM’s 1993 Deschutes River Management Plan established 1990 boating use figures as a baseline which is not to be exceeded and defined where and when motorized boats could be used. In 1999, the BLM implemented a moratorium on the issuance of new commercial boating permits for the Lower Deschutes. This closed the Deschutes River to issuance of new guide and outfitter permits; thus, preventing a further increase in commercial boating recreation on the river.

Angling methods and bag limits for gamefish species (including MCR steelhead) on the Deschutes River are regulated by the Oregon Department of Fish and Wildlife (ODFW) through the annual issuance of Oregon Sport Fishing Regulations. The 1999 edition of those fishing regulations prohibits fishing from a floating device, which requires that anglers beach their boats and fish from shore or by wading in the river. This regulation has been in effect for several years. Incidental take of MCR steelhead by anglers is addressed in a 4(d) rule soon to be issued by NMFS.

For purposes of administration, the BLM has divided the river into four segments based on geographic features, public road access, and recreational use patterns. The upper part of Segment 1 (Segment 1A) is the 13-mile stretch from Pelton Reregulating Dam [River Mile (RM) 100] downstream to Trout Creek Campground (RM 87). The lower part of Segment 1 (Segment 1B) is the 28-mile stretch from Trout Creek to the Deschutes Club locked gate (RM 59). Segment 2 is a 15-mile stretch from the locked gate to Shearars Falls (RM 44). Segment 3 is a 21-mile stretch from Shearars Falls to Macks

Canyon (RM 23). Segment 4 is a 23-mile stretch from Macks Canyon to the confluence of the Deschutes with the Columbia River. Motorized boating is allowed only in Segments 3 and 4, with Segment 4 receiving most of the motorized boating use.

Segment 1A is a popular fishing reach with limited whitewater boating opportunities. Segment 1A is also accessible by vehicle and by hiking trails. Segment 1B provides both fishing and whitewater boating, and is accessible primarily by boat with some limited vehicle access points. A total of 31,924 float boaters (both commercial and private) used Segment 1 between May 15 and September 15, 1998. This represents a 40.4% decrease from the 1990 base figure (53,600), which was established by the BLM's 1993 Lower Deschutes River Management Plan. Commercial boating use is restricted on all weekend days from Memorial Day weekend to Labor Day weekend in Segments 1. Segments 1A and part of Segment 1B (down to the northern boundary of the Warm Springs Indian Reservation at RM 69) are open to trout fishing between April 24 and October 31 and to steelhead fishing between April 24 and December 31. Downstream from the Warm Springs Reservation boundary at RM 69, the Deschutes River is open to both trout and steelhead fishing the entire year (ODFW 1999).

Segment 2 is the river's most heavily used section. The entire length of this segment is accessible by gravel or paved road and the railroad also parallels the river. It is used primarily by whitewater boaters during the summer and by trout and steelhead anglers during other times of the year. A total of 63,415 float boaters (both commercial and private) used Segment 2 between May 15 and September 15, 1998. This represents a 14.5% decrease from the 1990 base figure (74,100). Commercial boating use is restricted in Segment 2. This river segment is open to both trout and steelhead fishing the entire year (ODFW 1999).

Segment 3 is used mainly by steelhead fishermen in the fall and whitewater boaters in the summer. The entire reach is accessible by gravel road and the railroad parallels the river on the opposite side from the road. Motorized boating is allowed in Segment 3. A total of 10,365 boaters (both commercial and private; motorized and float) used Segment 3 between May 15 and September 15, 1998. This represents a 25.5% decrease from the 1990 base figure (13,900). This river segment is open to both trout and steelhead fishing the entire year (ODFW 1999).

Segment 4 is used mainly by fall steelhead fishermen with some whitewater boating and trout fishing. Access is mainly by boat and foot. The railroad parallels the entire length of this section. Motorized boating is allowed in Segment 4 and most of the use is by motorized boat. A total of 10,212 boaters (both commercial and private) used Segment 4 between May 15 and October 15, 1998. This represents a 47.9% decrease from the 1990 base figure (19,600). This river segment is open to both trout and steelhead fishing the entire year (ODFW 1999).

Professional guides and outfitters use motorized boats as well as inflatable rafts and drift boats to transport fishermen and other recreationists (whitewater rafters, etc.) on the river. Currently no motorized boating is allowed upstream from Shearars Falls. Motorized use is allowed from

Buckhollow Creek (approximately 1 mile downstream from Shearars Falls) to Heritage landing (near the mouth of the Deschutes River) from October 1 to June 14. From June 15 to September 30, motorized use is allowed only from Macks Canyon (River Mile 24.0) downriver to the mouth of the Deschutes River and only on an alternating schedule where use every other Thursday through Sunday is restricted. Appendix C6 of the BA provides a complete 1999 motorboating schedule.

All commercial permittees are required to comply with the list of stipulations issued with the BLM's "Special Recreation Application and Permit" (Form 8370-1; May 1996), many of which are meant to protect aquatic resources. Stipulations which relate directly to aquatic resource protection include: prohibition of camping on islands, "leave no trace" camping principles, closure of certain areas to camping and boat launching or take-out, requirement to carry out human waste and all other waste generated as a result of the permitted use, prohibition of washing dishes or using soap within 50 feet of any spring or tributary stream, prohibition of the removal of native materials (vegetation, rocks, etc.) from the river, and restriction of maximum party size to 16 people on river Segments 1, 3, and 4; and 24 people on river Segment 2.

Road Maintenance

The BLM maintains the Deschutes River access road downstream from Maupin, Oregon (RM 51.5) for 27 miles and upstream from Maupin, Oregon for 7 miles. The BLM also performs periodic maintenance on the 2 mile stretch of dirt road from Warm Springs to Mecca Flat. Road maintenance activities include blading gravel, maintenance and repair of ditches and other drainage structures, vegetation management (brushing and limbing), and resealing an aggregate surface. Some road maintenance is specifically designed to reduce runoff from roads to streams. No dumping of waste material resulting from road maintenance activities is permitted in riparian areas or in areas from which sediment could enter streams.

Range Allotments

Cattle grazing in riparian pastures along the Deschutes River and its tributaries on BLM land is authorized by the BLM to occur sometime between November 1 and May 1, with warm season (May-October) grazing not allowed. This grazing strategy was adopted in 1992 for all allotments that contain or are adjacent to streams (including the mainstem Deschutes River) which may affect listed fish species. Monitoring of riparian vegetative conditions, vegetative use by livestock, streambank conditions, and other indicators of BLM's properly functioning condition since the early 1990's indicates improvements in riparian conditions for most allotments. Riparian habitat conditions and monitoring studies are summarized for each allotment in Appendix B of the BA. The NMFS is, however, aware of some riparian grazing occurring as late as mid-June of 1999 on two allotments in the Maupin and Trout Creek areas. Since spring grazing activities which may affect MCR steelhead in the Lower Deschutes River and its tributaries have already been completed for 1999, those allotments will not be discussed further in this Opinion. However, prior to livestock turnout in the spring of 2000, the

BLM should complete interagency Section 7 consultation with NMFS to develop grazing strategies which minimize or avoid the potential for livestock to adversely affect (e.g. stepping on MCR steelhead redds, over-utilization of riparian vegetation, decreased streambank stability) MCR steelhead or their proposed critical habitat. That consultation should be initiated by mid-August of 1999 to allow for its completion well in advance of expected livestock turnout in 2000. The Mecca Flat pasture of the Delude allotment is the only allotment on which winter grazing would be permitted during 1999 (November 1, 1999 through January 2000). There are no perennial Deschutes River tributary streams on BLM lands within this allotment; the Deschutes River borders the west side for approximately two miles. Approximately half of the riparian zone along the river in this pasture is excluded from livestock use by fencing, and has been since the 1980s.

State of Oregon Boater Pass Program

In 1997, the State of Oregon contracted with the BLM to administer the State of Oregon Boater Pass Program which requires that all boaters using the lower 100 miles of the Deschutes River purchase a State Boater Pass. The BLM continues to administer this program. These boater passes can be purchased from a number of private vendors located throughout the State. State of Oregon Boater Pass stipulations which relate directly to aquatic resource protection are similar to those for the BLM-issued Guide and Outfitter permit, and include prohibition of camping on islands, closure of certain areas to camping and boat launching or take-out, requirement to carry out human waste and all other waste generated as a result of the permitted use, prohibition of washing dishes or using soap within 50 feet of any spring or tributary stream, prohibition of the removal of native materials (vegetation, rocks, etc.) from the river, and restriction of maximum party size to 16 people on river Segments 1, 3, and 4 and 24 people on river Segment 2.

Steelhead Spawning Ground Surveys

BLM fisheries personnel conduct annual steelhead spawning ground surveys on Macks Canyon, Ferry Canyon, Oak Brook, Buck Hollow, and Tenmile Creeks. Macks Canyon (RM 24), Ferry Canyon (RM 25), Oak Brook (RM 35), and Buck Hollow (RM 43) creeks all enter the Deschutes River within Segment 3. Tenmile Creek is a tributary to Trout Creek which enters the river at RM 87, the boundary between Segments 1A and 1B. Since it is necessary to attempt to identify both hatchery and wild steelhead spawners, it is sometimes necessary to disturb the fish in order to get a clear view of the adipose fin. Hatchery fish can be differentiated from wild fish by the absence of the adipose fin, which is clipped off prior to their release from the hatchery. ODFW estimates that in recent years, the percentage of hatchery strays in the Deschutes River has exceeded 70%, and most of these are believed to be long-distance strays from outside the ESU. It is stated in NMFS (1997b) that “one of the most significant sources of risk to steelhead in the Middle Columbia ESU is the recent and dramatic increase in the percentage of hatchery fish in natural escapement in the Deschutes River Basin.” Therefore, it is important to continue to distinguish between hatchery and wild steelhead on the spawning grounds to determine if this trend continues.

III. Biological Information and Critical Habitat

The listing status and biological information for MCR steelhead are described in Busby et al. (1996) and for Snake River fall chinook salmon in Myers et al. 1998. The NMFS proposed critical habitat for MCR steelhead on February 5, 1999 (64 FR 5740). The ongoing actions discussed in this biological opinion are within the area proposed as critical habitat for MCR steelhead. Critical habitat has not been proposed for the Deschutes River portion of the Snake River fall chinook salmon ESU.

MCR Steelhead

According to the BA, documented spawning and rearing areas for MCR steelhead on BLM lands are at various locations along the mainstem Deschutes River, in several tributaries (Bakeoven, Buck Hollow, Jones Canyon, Macks Canyon, Nena, Oak Brook, Tenmile, and Trout Creeks), and in the lower two miles of White River. MCR steelhead also incubate, feed, and migrate in these waters. MCR steelhead are also suspected but not confirmed to spawn in several other Deschutes River tributaries (Cottonwood, Deep, Ferry Canyon, and Ward Creeks). Historically, MCR steelhead are thought to have spawned in Bronx Canyon, Bull Run, Cove, Fall Canyon, and Sixteen Canyon Creeks in the Deschutes River basin. Based on limited spawning ground counts in the mainstem Deschutes and tributaries, it is believed that mainstem spawning accounts for 30% to 60% of natural production in the Deschutes River basin.

According to the BA, MCR steelhead spawn in the Lower Deschutes River and west side tributaries of the Deschutes River from March through June; while spawning in the east side tributaries occurs from January through mid-April. Fry emergence timing depends on time of spawning and water temperature during egg incubation, but usually occurs from late May through June. Therefore, some life stage of MCR steelhead is present in the Deschutes River system throughout the year.

Those MCR steelhead that spawn in the mainstem Deschutes River typically spawn near the downstream ends of islands or on the shallow water side between the island and the streambank. The mean water depth at which 28 MCR steelhead redds were located in the mainstem Deschutes River was 54.1 centimeters, mean water velocity over those redds was 71.4 centimeter/second, and mean gravel size in which the redds were constructed was 32.5 mm in diameter (Zimmerman and Reeves 1998). Determining specific locations of steelhead redds in most sections of the mainstem Deschutes River is difficult or impossible during most years, because of high flows and turbidity when steelhead are spawning (Jim Eisner, BLM Fishery Biologist, pers. comm. June 22, 1999).

Juvenile MCR steelhead rear throughout the mainstem Deschutes downstream from Pelton Reregulating Dam. They utilize streamside vegetation as well as stream substrate and other instream structure as cover. Sampling (electrofishing) conducted by Zimmerman and Reeves (1999) in the mainstem Deschutes River found that resident rainbow trout fry (young-of-the-year) outnumbered steelhead fry

by a proportion of approximately 9.5 to 1. The proportion of Age 1+ and older juvenile resident rainbow trout to juvenile steelhead was approximately 9 to 1.

SR Fall Chinook Salmon

SR fall chinook salmon occur throughout the lower 100 miles of the mainstem Deschutes River below Pelton Reregulating Dam. SR fall chinook spawning begins in late September, peaks in November, and is completed in December. Emergence from the gravel begins in January or February and is completed in April or May. During the years 1972 to 1987, an average of 76% of the fall chinook redds counted in the lower 100 miles of the river were counted upstream from Sherars Falls (RM 44). From 1988 to 1995, an average of only 30% of all SR fall chinook salmon redds counted were upstream from Sherars Falls (ODFW 1997). Most juvenile fall chinook salmon leave the Lower Deschutes River from May to July (shortly after emerging) as Age-0s.

SR fall chinook typically spawn in main channel areas, in deeper water, utilizing larger gravel than MCR steelhead. Chapman (1986) found that fall chinook salmon spawning in the Columbia River spawned in water up to 7 meters in depth. Chambers (1955) as cited in Chapman (1986) reported that fall chinook salmon in the Columbia River usually spawned between depths of 1.22 to 1.98 meters with a maximum depth of 7.3 meters. Bovee (1978) as cited in Groot and Margolis (1991) found that the mean depth at which fall chinook redds were located was 30 cm, with a range from 10 to 120 cm.

Like MCR steelhead, SR fall chinook salmon fry utilize streamside vegetation as well as stream substrate and other instream structure as cover. However, since SR fall chinook salmon begin their downstream migration as Age-0s shortly after emergence, they would not be susceptible to predation over as long a time period as would juvenile MCR steelhead.

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA, as defined by 50 CFR Part 402 of the implementing regulations. NMFS discusses the analysis necessary for application of these standards in the particular contexts of the Pacific salmonids in Attachment 2 of the March 18, 1997, biological opinion, "Implementation of Land and Resource Management Plans (USFS) and Resource Management Plans (BLM)" (NMFS 1997a). This analysis involves the following steps: (A) define the biological requirements of the species; (B) evaluate the environmental baseline relative to the species' current status; (C) determine the effects of the proposed or continuing action on the species; (D) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages; and (E) identify reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the species.

In summary, for spawning and rearing habitat, NMFS' jeopardy analysis considers direct or indirect mortality of MCR steelhead or SR fall chinook salmon attributable to the proposed action. The NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for productive spawning and rearing of MCR steelhead or SR fall chinook salmon.

A. Biological Requirements

For this consultation, NMFS finds that the biological requirements of MCR steelhead and SR fall chinook salmon are best expressed in terms of environmental factors that define properly functioning freshwater aquatic habitat necessary for survival and recovery of the ESUs. The NMFS defines this "properly functioning" habitat condition as the state in which all of the individual habitat factors operate together to provide a healthy aquatic ecosystem that meets the biological requirements of the fish species of interest. Individual environmental factors include water quality and quantity, habitat access, physical habitat elements, channel condition, and hydrology. Properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are necessary for the survival and recovery of MCR steelhead and SR fall chinook salmon.

B. Environmental Baseline

Current range-wide status of MCR steelhead and SR fall chinook salmon ESUs under environmental baseline.

The NMFS described the current population status of the MCR steelhead in its status review (Busby et al. 1996) and of SR fall chinook salmon in Myers et al. (1998).

Action Area. The "action area" is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The "action area" for this consultation, therefore, includes the mainstem Deschutes River from Pelton Reregulating Dam downstream to its mouth and all tributaries in that reach which flow through or adjacent to BLM land.

Current status of MCR steelhead and SR fall chinook salmon ESUs under environmental baseline within the action area.

The current population status and trends for MCR steelhead are described in Busby et al. (1996). Myers et al. (1998) described current population status and trends for the SR fall chinook salmon ESU which includes the Deschutes River population. ODFW (1997) listed the Pelton/Round Butte hydroelectric complex, low summer flows and high water temperatures in tributary streams, and stream bank degradation as production constraints on MCR steelhead in the Lower Deschutes River. ODFW (1997) listed spawning gravel quality and quantity as the major production constraints on fall chinook salmon in the Lower Deschutes River. Sedimentation (resulting mainly from glacial flour from Mount

Hood glaciers) in the mainstem Deschutes downstream from White River (River Mile 47) could cause spawning gravel for both MCR steelhead and SR fall chinook to become less useable and could negatively impact aquatic insect production, decreasing juvenile salmonid production potential.

Implementation of standards developed as a result of decisions described in the BLM's 1993 Lower Deschutes River Management Plan regarding livestock grazing, off-road vehicle management, and management of undeveloped campsites have resulted in improvements in riparian vegetation conditions on BLM lands along the Lower Deschutes River and some of its tributaries. Several campsites within riparian areas have been closed and others are being actively rehabilitated to assist in vegetative recovery. Many of the plan's decisions focus on controlling recreation use and protecting riparian and fisheries habitats.

Environmental baseline conditions within the action area were evaluated for the subject actions at the project site and watershed scales. This evaluation was based on the "matrix of pathways and indicators" (MPI) described in "Making Endangered Species Act Effects Determinations for Individual or Grouped Actions at the Watershed Scale" (NMFS 1996). This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species. For the purposes of this consultation, streams within the action area were grouped into six watersheds. These were: 1) Lower Deschutes River; 2) Macks Canyon, Jones Canyon, Bakeoven Creek, Buck Hollow Creek, Ferry Canyon, and Oakbrook Canyon; 3) Gordon Canyon, Harris Canyon, Sixteen Canyon, Box Elder Canyon, Rattlesnake Canyon, Cove Creek, Fall Canyon, Bull Run Canyon, Dry Canyon, and Craft Canyon; 4) Wapinitia Creek, Cottonwood Creek, and Deep Creek; 5) Trout Creek and Tenmile Creek; and 6) White River.

In the Lower Deschutes River mainstem, 11 of the 16 habitat indicators for which data were available were rated as properly functioning, based on thresholds presented in NMFS' MPI. Water temperature, chemical contamination/nutrients, and physical barriers were rated as not properly functioning, while road density and location was rated as functioning at risk. Summer water temperatures as high as 76/F have been recorded at River Mile 1. The Lower Deschutes is on the Oregon Department of Environmental Quality (ODEQ) Clean Water Act Section 303(d) list because of low dissolved oxygen levels and pH. On the mainstem Deschutes River, the Pelton/Round Butte dam prevents MCR steelhead from reaching historic spawning and rearing habitat.

In stream groups 2-5, which are all tributaries to the Deschutes River, water temperature, large wood, pool frequency, width/depth ratio, and peak flow/base flow habitat indicators are rated as not properly functioning. Sediment/turbidity, chemical contamination/nutrients, substrate embeddedness, and pool quality indicators are rated as at risk or not properly functioning for these tributary streams.

For the White River, which enters the Deschutes River at RM 47, 9 of the 16 habitat indicators were rated as properly functioning. Water temperature and sediment/turbidity were rated as not properly

functioning. Maximum water temperatures reach 75/F. Since the White River originates on the slopes of Mt. Hood, the glacial flour content is high. A 50-foot high natural waterfall at River Mile 2 blocks upstream migration for anadromous fish.

V. Analysis of Effects

A. Effects of Proposed Actions

The effects determination in the BA was made using a method for evaluating current aquatic conditions (the environmental baseline) and predicting effects of the action on them. This process is described in the document "Making ESA Determinations at the Watershed Scale" (NMFS 1996). This assessment method was designed for the purpose of providing adequate information in a tabular form in BAs for NMFS to determine the effects of actions subject to consultation. The effects of the actions are expressed in terms of the expected effect (restore, maintain, degrade) on each of 16 aquatic habitat factors in the action area, as described in the "checklist for documenting environmental baseline and effects of the action" (checklist) completed for each action and watershed. The results of the completed checklist for the action provides a starting point for determining the overall effect of the action on the environmental baseline in the action area.

Guide and Outfitter Program

The primary effect of commercial boating on MCR steelhead and SR fall chinook salmon in the mainstem Deschutes River would be the disturbance of spawning adults. It is believed that repeated disturbance of spawning adult steelhead or salmon by boats passing near the fish may cause the fish to abandon their redds or may stress spawning fish such that only a portion of eggs are deposited. Dufour (1995) found that 11 percent of the watercraft (inflatable rafts, kayaks, and inflatable kayaks) that passed by spawning spring/summer chinook salmon in the Upper Salmon River in Idaho caused fish to move from their redds. All of these fish returned to their redds within a short time. NMFS is not aware of any data regarding the effects of disturbance of spawning adult steelhead by boaters. SR fall chinook salmon spawning at certain locations in the Deschutes River may also be disturbed by passing boats (Jim Newton, ODFW District Fishery Biologist, pers. comm., July 1, 1999).

A second potential effect of activities associated with boating would be anglers or other recreationists (whitewater rafters, etc.) actually stepping on MCR redds while eggs or alevins are in the gravel. Roberts and White (1992) found that humans stepping on salmonid redds can measurably decrease egg-to-emergent fry survival. ODFW angling regulations prohibit fishing from a floating device in the Deschutes River. Since anglers are required to leave their boats to fish, some wading is necessary. As discussed above, MCR steelhead typically spawn in water less than 2 feet in depth and in close

proximity to islands where anglers could easily wade. Therefore, there is a potential that anglers or other recreationists could step on MCR steelhead redds. Because SR fall chinook salmon typically spawn in main channel locations and in deeper water, the possibility of their redds being stepped on is negligible.

A third potential effect of commercial boating on MCR steelhead and SR fall chinook salmon in the mainstem Deschutes River would be the displacement of juveniles from streambank cover to open water where they could momentarily become more susceptible to predation by larger resident trout or northern pikeminnow. Satterthwaite (1995), in a study conducted in the Rogue and Chetco rivers in southwestern Oregon, found that most juvenile chinook and Age 1+ juvenile steelhead reacted when boats pass directly overhead. A startle response (a quick dart by the fish) was the most common behavior of fish passed by motorboats and driftboats, while an avoidance response (slow or moderate movement away from the boat) was the most common behavior observed among fish passed by kayaks. In contrast, few juvenile salmonids exhibited behavioral responses when boats passed at a lateral distance of 5 meters from the fish. Although no studies were found which addressed the subject, juvenile steelhead and chinook salmon might also be flushed from cover by wading anglers or other recreationists.

Although the possibility does exist that juvenile steelhead and chinook salmon flushed from cover by boats or wading humans may become momentarily more susceptible to predation by other larger fishes or avian predators, NMFS believes that the probability of incidental take resulting from these activities is minimal. In a study conducted on the Rogue River in southwest Oregon, Satterthwaite (1995) found that tour-boat operations had minimal effect, if any, on the susceptibility of juvenile salmonids to predation by northern pikeminnow. As mentioned above, Zimmerman and Reeves (1999) found that young-of-the-year and juvenile resident trout outnumber young-of-the-year and juvenile steelhead in the Deschutes River by approximately 9.5 to 1, which greatly reduces the odds that steelhead would be selected as prey. In addition, juvenile whitefish, dace, sucker, chiselmouth, redbelly darter, and northern pikeminnows are also present in the Deschutes River and available as prey for larger salmonids, which further reduces the likelihood of juvenile steelhead or chinook salmon being selected as prey. Riparian vegetation monitoring on BLM lands indicates that streambank cover is adequate and improving along most reaches of the Deschutes River so that a juvenile steelhead or chinook salmon flushed from one location would likely be able to escape to other cover before being eaten by predatory species. It also seems likely that any disturbance by boats or wading humans that flushes juvenile steelhead or salmon from cover would also frighten the potential predator fish from the area.

Motorized boating and/or floatboating on the river is not expected to degrade any of the habitat indicators listed in the MPI. Small amounts of sediment could enter the river from user created trails and areas where boats have been pulled up on shore and a small amount of riparian vegetation could be removed due to these same activities. However, because of the size and flow of the Deschutes River and the small amount of area disturbed, both the sediment/turbidity indicator and the water temperature indicator would be minimally affected.

Road Maintenance

Because of the proximity of the road to the Deschutes River at several locations both upstream and downstream from Maupin, Oregon, routine road maintenance activities could result in small amounts of sediment entering the river. Maintenance of the Deschutes River access road could also result in limited sediment input at the mouths of tributary streams which the road crosses. The road and some associated bank stabilization structures along the river are also preventing the establishment of riparian vegetation in some areas.

Beneficial effects occur where road maintenance reduces the potential for catastrophic erosion and delivery of large amounts of sediment to stream channels. Severe erosion is almost inevitable if roads are not regularly maintained, and thus regular maintenance is a high priority. Failure to properly maintain road drainage can result in much larger sediment inputs to streams than those resulting from the maintenance work.

Range Allotment

As is the case with boats or wading humans discussed above, cattle wading into a stream to drink might possibly frighten juvenile MCR steelhead and/or SR fall chinook salmon from streamside cover. Once these juveniles are frightened from cover and swim into open water, they become more susceptible to predation from larger fish. Since there are two sites in the Mecca Flat pasture (Delude allotment) where cattle drink water from the Deschutes River (J. Eisner, BLM Fishery Biologist, pers. com., May 21, 1999), the potential exists for such mortality to occur. For the reasons discussed above regarding boaters and wading humans, NMFS believes that the risk of mortality of listed salmonids associated with watering cattle is minimal. In addition, because of the small area of streambank actually utilized by cattle while watering and the availability of good streamside cover in the immediate vicinity of the watering areas, mortality of MCR steelhead and/or SR fall chinook salmon from this activity is expected to be minimal.

State and BLM Boater Pass Program

The effects on MCR steelhead and SR fall chinook salmon of private boaters covered under this program are expected to be similar to those for commercial boaters discussed above.

Steelhead Spawning Ground Survey

Since it is necessary to identify hatchery and wild adult steelhead on the spawning grounds, it is sometimes necessary to disturb the fish in order to get a better view of the adipose fin area. Under the ESA, such disturbance may fall under the definition of "harassment." However, since the BLM only conducts steelhead spawning surveys once each year on each stream surveyed, harassment is expected to be minimal.

B. Cumulative Effects

"Cumulative effects" are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area for this consultation includes the Lower Deschutes River and its tributaries on BLM land downstream from Pelton Reregulating Dam. The BLM identified no specific private or state actions that are reasonably certain to occur in the future that would affect MCR steelhead or their habitat within the action area. Since the BLM is the primary manager (171,849 acres) of the land along the Lower Deschutes River, Federal actions are more likely to dominate stream conditions.

Significant improvement in MCR steelhead reproductive success outside of BLM land is unlikely without changes in grazing, agricultural, and other practices occurring within these non-Federal riparian areas along the Lower Deschutes River and its tributaries. Given that the MCR steelhead is listed as threatened and critical habitat has been proposed, NMFS assumes that non-Federal land owners will take steps to curtail or avoid land management practices that would result in the take of MCR steelhead. However, NMFS is not aware of any specific future actions which are reasonably certain to occur on non-Federal lands. Until improvements in non-Federal land management practices are actually implemented, NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

VI. Conclusions

The NMFS has determined that, when the effects of the subject actions addressed in the biological opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of MCR steelhead or SR fall chinook salmon.

Additionally, the NMFS concludes that the subject actions would not cause adverse modification or destruction of proposed critical habitat for MCR steelhead.

In reaching these conclusions, NMFS has utilized the best scientific and commercial data available as documented herein and by the BA.

VII. Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. The NMFS has the following conservation recommendations regarding the actions addressed in this Opinion:

For those allotments within the Deschutes Resource Area on which 1999 grazing had been completed prior to the effective listing date (May 24, 1999) for MCR steelhead and are, therefore, not covered by this Opinion, the BLM should complete interagency Section 7 consultation with NMFS to develop grazing strategies which minimize or avoid the potential for livestock to adversely affect (e.g. stepping on MCR steelhead redds, over-utilization of riparian vegetation, decreased streambank stability) MCR steelhead or their proposed critical habitat prior to livestock turnout in the spring of 2000. That consultation should be initiated by mid-August of 1999 to allow for its completion well in advance of expected livestock turnout in 2000.

The BLM should increase monitoring of grazing permittees and enforcement of the terms of the annual operating plans to ensure that riparian grazing does not occur outside the authorized grazing period on any of the allotments.

VIII. Reinitiation of Consultation

Reinitiation of consultation is required: (1) if the action is modified in a way that causes an effect on the listed species that was not previously considered in the BA and this Biological Opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16); or, (4) the actions discussed in this Opinion are not in compliance with requirements of NMFS' broad-scale biological opinion currently being developed.

IX. References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion in addition to the BA and additional information requested by NMFS and provided by the Prineville BLM District.

Bureau of Land Management; Bureau of Indian Affairs, Confederated Tribes of the Warm Springs Reservation; Oregon State Parks & Recreation Department; Oregon Department of Fish and Wildlife; Oregon State Marine Board; Oregon State Police; Deschutes River Management Committee; Wasco, Sherman, and Jefferson Counties; and City of Maupin. 1993. Final Lower Deschutes River Management Plan and Environmental Impact Statement—Volume I. January.

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Zimmerman, C.E., and G. H. Reeves. 1999. Steelhead and Rainbow Trout: Early Life History and Habitat Use in the Deschutes River, Oregon. 1998 Annual Report. U.S. Forest Service Pacific Northwest Research Station and Oregon State University.

X. Incidental Take Statement

Section 4 (d) and Section 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. If necessary, it also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

Should the range of the SR fall chinook salmon ESU be expanded to include the Deschutes River population of fall chinook salmon, the NMFS expects that this Opinion will be the basis of a biological opinion for that ESU. Further, the following Incidental Take Statement is expected to become effective following the NMFS' adoption of this Opinion as the biological opinion once fall chinook salmon in the Deschutes River are listed (50 CFR 402.10 (d)).

A. Amount or Extent of Take

The NMFS anticipates that the subject actions covered by this biological opinion have more than a negligible likelihood of resulting in incidental take of MCR steelhead and SR fall chinook salmon. Some level of incidental take is expected to result from disturbance of spawning adult steelhead, frightening of juvenile MCR steelhead and SR fall chinook salmon from cover such that they may become more susceptible to predation, and the potential for anglers and other recreationists associated with commercial and private motor and float boating to actually step on MCR steelhead redds. Some minimal amount of take may also result from the transport of sediment to the Deschutes River resulting from routine road maintenance; and from the frightening of juvenile MCR steelhead and SR fall chinook salmon from cover by livestock which have come down to the river to water. In addition, some harassment of adult MCR steelhead may occur during annual MCR steelhead spawning ground surveys conducted by the BLM. Because of the inherent biological characteristics of aquatic species such as MCR steelhead and SR fall chinook salmon, however, the likelihood of discovering take attributable to these actions is very small. Effects of actions such as those addressed in this biological opinion are largely unquantifiable in the short term, and may not be measurable as long-term effects on the species' habitat or population levels. Therefore, even though NMFS expects some incidental take to occur (primarily through harassment) due to the actions covered by this biological opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take of listed fish at any life stage.

Based on the information in the BA and additional information provided by the BLM, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this biological opinion. To ensure protection for a species assigned an unquantifiable level of take, reinitiation of consultation is required: (1) if any action is modified in a way that causes an effect on the listed species that was not previously considered in the BA and this biological opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16); or, (4) the actions discussed in this Opinion are not in compliance with requirements of NMFS' broad-scale biological opinion being developed. This incidental take statement shall be in effect for the duration of the actions covered by this biological opinion.

B. Effect of the Take

In this Opinion, NMFS has determined that the level of anticipated take is not likely to result in jeopardy to MCR steelhead or SR fall chinook salmon or to destroy or adversely modify proposed critical habitat for MCR steelhead when the reasonable and prudent measures are implemented.

C. Reasonable and Prudent Measures

The NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of MCR steelhead and/or SR fall chinook salmon resulting from the actions covered by this Opinion.

1. The BLM shall regulate/manage commercial and private motor boaters and float boaters using the Lower Deschutes River such that disturbance of spawning adult MCR steelhead and SR fall chinook salmon is avoided or minimized.
2. The BLM shall minimize the potential for anglers or other recreationists to actually step on MCR steelhead redds.
3. The BLM shall minimize disturbance and flushing by humans and livestock of juvenile MCR steelhead and SR fall chinook salmon from shore-line cover.
4. The BLM shall utilize Best Management Practices which avoid or minimize sediment entering streams as a result of routine road maintenance procedures.
5. The BLM shall minimize harassment of adult steelhead and stepping on redds during annual spawning ground surveys.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary. The BLM shall do the following:

1. To avoid or minimize disturbance of spawning adult MCR steelhead and SR chinook salmon by boaters, the BLM shall:
 - a. Identify key areas along the Lower Deschutes River where MCR steelhead and/or SR fall chinook salmon could potentially spawn. Use past spawning ground survey records from ODFW or other sources to determine likely spawning areas. If key areas cannot be identified by actual location of redds, the BLM shall base identification of sites on substrate size, water velocity, water depth, etc. which would typically be used by spawning steelhead and/or fall chinook salmon.
 - b. Flag, place floating buoys, or otherwise clearly mark identified key MCR steelhead and SR fall chinook spawning areas such that commercial and private motor boaters and float boaters can avoid those areas. Markers for potential MCR steelhead spawning areas shall be in place

from March 15 to July 15 when MCR steelhead may be spawning or eggs or alevins present in the gravel. Markers for potential SR fall chinook salmon spawning areas shall be in place from September 15 to December 1 when SR chinook salmon may be spawning. Placement of such markers shall define at least a 25-foot radius of protection for each identified potential spawning site from all passing motor boats or floatboats.

c. Inform (in writing as an attachment to the permit as well as by posting signs at all boat launch areas) all commercial and private motor boaters and float boaters that spawning adult MCR steelhead and/or their redds are or may be present in certain areas of the Deschutes River from March 15 to July 15 and that spawning adult SR fall chinook salmon may be present from September 15 to December 1, that the areas where they would most likely be present are marked, that these species are listed as threatened under ESA, and that these areas should be avoided.

d. Monitor compliance of boaters with spawner protection measures and evaluate the effectiveness of providing information/education materials. Provide a written report to NMFS by January 1 each year documenting the results of monitoring.

2. To minimize the potential for anglers or other recreationists to actually step on MCR steelhead redds, the BLM shall:

a. Inform (in writing as an attachment to the permit as well as by posting signs at all boat launch areas) all commercial and private motor boaters and float boaters that spawning adult MCR steelhead and/or their redds are or may be present in certain areas of the Deschutes River from March 15 to July 15, that the areas where they would most likely be present are marked, that MCR steelhead are listed as threatened and protected under the ESA, and that these areas should be avoided.

b. Inform other recreationists (campers, shore anglers, hikers, etc.) by posting signs at all established campgrounds, the more popular dispersed campsites, trailheads, vehicle parking areas along access roads, etc. that spawning adult MCR steelhead and/or their redds are or may be present in certain areas of the Deschutes River from March 15 to July 15, that the areas where they would most likely be present are marked, that MCR steelhead are listed as threatened under ESA, and that these areas should be avoided.

3. To minimize the disturbance or flushing by humans and livestock of juvenile MCR steelhead and SR fall chinook salmon from shore-line cover, the BLM shall:

a. Inform (in writing as an attachment to the permit as well as by posting signs at all boat launch areas) all commercial and private motor boaters and float boaters that juvenile MCR steelhead and SR fall chinook salmon utilize shoreline vegetation, logs, rootwads, and other structure as

cover; that these juvenile fish may become more susceptible to predation when flushed from that cover; that these species are listed as threatened under ESA, and that disturbance of these areas should be minimized.

b. Inform other recreationists (campers, shore anglers, hikers, etc.) by posting signs at all established campgrounds, the more popular dispersed campsites, trailheads, vehicle parking areas along access roads, etc. that juvenile MCR steelhead and SR fall chinook salmon utilize shoreline vegetation, logs, rootwads, and other structure as cover; that these juvenile fish may become more susceptible to predation when flushed from that cover; that these species are listed as threatened under ESA, and that disturbance of these areas should be minimized

c. Investigate the feasibility of establishing, and establish where feasible, water sources for livestock outside riparian areas so that it is not necessary for livestock to water from the river.

4. To avoid or minimize the potential for sediment resulting from road maintenance entering streams, the BLM shall:

a. Dispose of waste material generated from road maintenance activities in stable sites only;

b. Not dispose of waste material generated from road maintenance activities on active floodplains;

c. Maximize maintenance activities during the dry season to avoid wet periods;

d. Where sediment risks warrant, use filter strips (straw bales or similar materials);

e. Leave vegetation in ditches, when possible; and,

f. Clean ditches and culverts of materials resulting from slides or other debris.

5. To minimize harassment of adult MCR steelhead and stepping on redds by survey personnel during annual spawning ground surveys in selected Deschutes River tributaries, the BLM shall:

a. Conduct redd surveys only on days when light conditions and water clarity provide good visibility of redds and spawning fish;

b. Maximize visibility of redds and spawning fish by wearing good quality polarized sunglasses when conducting spawning surveys;

c. Avoid wading in pool tailouts or other areas of the stream where MCR steelhead are most likely to construct redds; and,

d. Limit the amount of effort expended (and thus the amount of harassment of the fish) in trying to differentiate between hatchery and wild steelhead.